

LETTER
OF
THE SECRETARY OF WAR,
COMMUNICATING,

In compliance with a resolution of the Senate of July 24, 1866, information touching the probable cost of constructing a railroad on the route mentioned in the charter of the Northern Pacific Railroad Company.

JANUARY 3, 1867.—Referred to the Committee on the Pacific Railroad.

JANUARY 7, 1867.—Ordered to be printed.

WAR DEPARTMENT,
Washington City, December 26, 1866.

SIR: In answer to the Senate's resolution of July 24, 1866, requesting the Secretary of War to furnish certain information respecting a proposed Northern Pacific railroad, I send herewith reports from the Quartermaster General and Chief of Engineers; also, one by General Simpson, United States engineers, transmitted by the Secretary of the Interior; which contain all the information on the subject in possession of the department.

The earliest occasion is taken after the receipt of the reports to communicate them to the Senate.

Very respectfully, sir, your obedient servant,

EDWIN M. STANTON.

Secretary of War.

Hon. L. F. S. FOSTER,
President of the Senate.

ENGINEER DEPARTMENT,
Washington, December 14, 1866.

SIR: In obedience to your instructions of July 26, 1866, to prepare such information as may be in the possession of this department touching the probable cost of constructing a railroad on the route mentioned in the charter of the Northern (Pacific) Railroad Company, as called for in the Senate resolution of July 24, 1866, I have the honor to present herewith a copy of Governor Stevens's estimate of cost of construction of a railroad upon the route surveyed by him, accompanied by a modification thereof, adapted to the increased valuation of material and labor since the date of his estimate, and embracing items of cost which are not and do not appear to have been included in his estimate. It is not known that any further surveys upon this route have been made or additional information bearing upon this subject has been obtained

since the publication of Governor Stevens's report in 1860. (Vol. XII, Parts 1 and 2, of Reports of Exploration and Surveys to ascertain the most practicable and economical route for a railroad from the Mississippi river to the Pacific ocean.)

With the view of arriving at the probable cost of the route in question, based upon any additional information, a letter was addressed on the 18th of September last to Brevet Brigadier General J. H. Simpson, lieutenant colonel of engineers, now under the orders of the honorable Secretary of the Interior, on duty connected with Pacific railroads, who replies under date of December 8th that he is directed to state "that said information will be furnished the War Department so soon as the honorable Secretary of War calls for it."

The delay of General Simpson's reply to the letter of this department has prevented an earlier report upon the subject.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,

Chief of Engineers, Brigadier and Brevet Major General U. S. Army.

Hon. E. M. STANTON,

Secretary of War.

Estimate of cost of road from Breckinridge to Seattle, via Fort Union, Fort Benton, Cadotte's Pass, Cœur d'Alène Mission, north of the Cœur d'Alène lake, and the Snoqualmoo Pass, using the long tunnel. Entire distance, 1,544.51 miles.—(See Gov. Stevens's Report, pages 348, 351, Vol. XII, Part I, Explorations and Surveys for Railroad from the Mississippi river to the Pacific.)

Breckinridge to crossing of Milk river, 712 miles, at \$40,000 per mile.....	\$28,480,000
Crossing of Milk river to point of departure from Box Elder creek, 30 miles, at \$40,000 per mile.....	1,200,000
Thence to Fort Benton, 51.5 miles, at \$80,000 per mile.....	4,120,000
Fort Benton to entrance to tunnel, 102.2 miles, at \$70,000 per mile.....	7,154,000
Short tunnel, 2,640 feet, at \$120 per foot.....	316,800
Tunnel, 22,123 feet, at \$130 per foot, 4.19 miles.....	2,875,990
Thence to crossing of Hell-Gate, 91.86 miles, at \$60,000 per mile..	5,511,600
Thence to crossing of Bitter Root, 65 miles, at \$50,000 per mile..	3,250,000
Thence to entrance into tunnel, 35 miles, at \$60,000 per mile...	2,100,000
Tunnel, 1.6 mile, at \$130 per foot.....	1,098,240
West end of tunnel to Cœur d'Alène Mission, 48.5 miles, at \$60,000 per mile.....	2,910,000
Thence to point beyond crossing of Spokane, 70.5 miles, at \$60,000 per mile.....	4,230,000
Thence to fork of line to Vancouver, 91.25 miles, at \$45,000 per mile.....	4,106,250
Thence to crossing of Columbia, 20 miles, at \$45,000 per mile..	900,000
Thence to entrance to long tunnel, 138.25 miles, at \$50,000 per mile.....	6,912,500
Long tunnel, 11,840 yards or $6\frac{3}{4}$ miles, about \$140 per foot or \$420 per yard, 6.75 miles.....	5,000,000
Thence to Seattle, 75 miles, at \$60,000 per mile.....	4,500,000
Total length, 1,543.60 miles.....	84,665,380
Steamers on the Missouri and Columbia.....	1,500,000
Reservoirs, aqueducts, &c.....	2,000,000

Depots and permanent fixtures	\$1, 750, 000
Engineering and contingencies	5, 000, 000

 94, 915, 380

The cost of the short tunnel will be, 4,000 yards or
2,247 miles, at \$390 per yard..... \$1, 560, 000

Add four and one-half miles of road and difficult
work, at \$100,000 per mile..... 450, 000

 2, 010, 000

Total cost of short tunnel..... 2, 990, 000

 91, 925, 380

Estimate of cost of road from Breckinridge to Vancouver, via Fort Union, Fort Benton, Cadotte's Pass, Cœur d'Alène Mission, north of the Cœur a'Alène lake and the Dalles. Entire distance, 1,526.60 miles.

From Breckinridge to fork of line to Vancouver, as by A, 1,303.60
miles..... \$67, 352, 880

Thence to crossing of Columbia, 20 miles, at \$45,000 per mile.. 900, 000

Thence to Dalles, 113 miles, at \$60,000 per mile..... 6, 780, 000

Thence to Vancouver, 90 miles, at \$100,000 per mile..... 9, 000, 000

Total, 1,526.60 miles..... 84, 032, 880

Steamers on the Missouri and Columbia..... 1, 500, 000

Reservoirs, aqueducts, &c 2, 000, 000

Depots and permanent fixtures 1, 750, 000

Engineering and contingencies..... 5, 000, 000

 94, 282, 880

Estimate of cost of branch road from Vancouver to Seattle, 172

miles, at \$50,000 per mile..... \$8, 600, 000

Depots 150, 000

Total cost of road..... 8, 750, 000

Recapitulation of cost of road from Breckinridge to Seattle, with a branch road to Vancouver, and a branch road from Vancouver to Seattle.

From Breckinridge to Seattle, 1,543.60..... \$94, 915, 380

Branch to Vancouver, 223 miles..... 16, 930, 000

Branch from Vancouver to Seattle, 172 miles 8, 750, 000

 120, 595, 380

Estimate of cost of road, as per A and B, leaving the route on Sun river, passing up that river to Elk Fork, thence along that fork to Lewis and Clark's Pass, and thence to its junction with the Big Blackfoot.

The cost from Fort Benton to Hell-Gate, (crossing to Fort Owen,) as preceding estimate, is \$15,858,390. Distance, 198.25 miles.

The cost for this portion of the route, by Lewis and Clark's Pass, will be as follows:

Fort Benton to Sun river, 55.5 miles, at \$55,000 per mile..... \$3, 052, 500

Thence to ten miles above Forks, 48 miles, at \$45,000 per mile.. 2, 160, 000

Thence to entrance to tunnel, 19.121 miles, at \$100,000 per mile.	\$1, 912, 100
Tunnel, 2.129 miles, at \$120 per foot.....	1, 348, 934
Thence to entrance into Big Blackfoot, 11.875 miles, at \$55,000 per mile.....	653, 125
Thence to Hell-Gate, crossing to Fort Owen, 86.5 miles, at \$60,000 per mile.....	5, 190, 000
Total length, 223.125 miles.....	<u>14, 316, 659</u>

By taking Lewis and Clark's Pass, as above, the distance is increased 24.875 miles, and the cost diminished \$1,541,731.

The route by the Missouri to the mouth of Sun river will increase the cost, over the route by the plateau from Fort Benton to Sun river, as follows:

Fert Benton, via Missouri, to Sun river, 52.5 miles, at \$80,000 per mile.....	\$4, 200, 000
Thence up river to where route over plateau strikes it, 10.5 miles, at \$45,000 per mile.....	472, 500
Total length, 63 miles.....	<u>4, 672, 500</u>
Over plateau—	
Fort Benton to Sun river, 55.5 miles, at \$55,000 per mile.....	<u>3, 052, 500</u>
Increase of distance, 7.5 miles, and cost.....	<u>1, 620, 000</u>

GENERAL RECAPITULATION.

Breckinridge to Seattle—	Distance.	Cost of long tunnel, Cascades.	Cost of short tunnel, Cascades.
Plateau route via Cadotte's Pass.....	1, 543. 6	\$94, 915, 380	\$91, 925, 380
Plateau route via Lewis and Clark's Pass.....	1, 568. 475	93, 328, 649	90, 338, 649
Missouri and mouth of Sun river route via Cadotte's Pass.....	1, 551. 1	96, 560, 380	93, 570, 380
Missouri and mouth of Sun river route via Lewis and Clark's Pass.....	1, 575. 975	94, 973, 649	91, 983, 649

Breckinridge to Vancouver:

Plateau route via Cadotte's Pass, 1,526.6 miles.....	\$94, 282, 880
Plateau route via Lewis and Clark's Pass, 1,551.475 miles.....	92, 696, 149
Missouri and mouth of Sun river route via Cadotte's Pass, 1,534.1 miles.....	95, 927, 880
Missouri and mouth of Sun river route via Lewis and Clark's Pass, 1,558.975 miles.....	94, 341, 149

Modification of estimate.

Assuming the maximum estimate of Gov. Stevens's, as above, from Breckinridge to Seattle, on Puget sound, for a basis	\$96, 560, 380
Branch to Vancouver, as above.....	<u>16, 930, 000</u>
Amount of Gov. Stevens's estimate.....	<u>113, 490, 380</u>

For that portion of the road west of the Rocky mountains, including branch to Vancouver or Portland, add 60 per cent. .	\$115, 898, 208
For that portion east of Rocky mountains, to Breckinridge, 100 per cent.	81, 908, 000
From Breckinridge to Lake Superior, not embraced in Gov. Stevens's estimate	12, 500, 000
For equipment for the first working of the road, which does not appear to be included in Gov. Stevens's estimate	5, 000, 000
Total for construction and equipment	215, 306, 208

A. A. HUMPHREYS,

Chief of Engineers

DEPARTMENT OF THE INTERIOR,

Washington, D. C., December 17, 1866.

SIR: I have the honor to enclose herewith a report from Brevet Brigadier General J. H. Simpson, U. S. army, dated the 15th instant, in relation to the probable cost of constructing the Northern Pacific railroad, as called for by a resolution of the Senate of the United States, dated July 24, 1866.

I am, sir, very respectfully, your obedient servant,

O. H. BROWNING, *Secretary.*

Hon. E. M. STANTON,

Secretary of War.

DEPARTMENT OF THE INTERIOR, ENGINEER OFFICE,

Washington, D. C., December 15, 1866.

SIR: I have the honor to submit the following report, in relation to the information called for by the following resolution of the Senate of the United States, dated 24th July, 1866, so far as the same can be furnished by this department:

Resolved, That the Secretary of War be requested to furnish to the Senate such information as may be in the possession of the War Department touching the probable cost of constructing a railroad on the route mentioned in the charter of the Northern Pacific Railroad Company, together with estimates of the probable amount of government transportation on said road, derived from such data as may be in his power; and that the Secretary of the Interior render him any aid he may call for in answering this resolution."

The only report and maps in this department in relation to this road are those of Governor Isaac I. Stevens, who explored this route in 1853, '54, and '55, and submitted his final report to the honorable Secretary of War February 7, 1859, which report and maps were turned over to this department by the War Department in accordance with a resolution of Congress approved March 3, 1865, and constitute executive document, first session thirty-sixth Congress, volume 2, part 1.

I have examined the final report of Governor Stevens above referred to, and as it is utterly impossible to base an estimate at all approximating the truth except on an actual survey or exploration on the ground, there is no alternative but to make use of the data furnished by him, supplying to the best of my ability only such omissions as he may have made, and varying the cost of the

different items in his estimates to suit the enhanced price of labor and material at the present date.

Governor Stevens gives no estimate for the portion of the route from the head of Lake Superior to Breckinridge, on the Red River of the North, at the mouth of the Bois de Sioux, an estimated distance along the probable route of two hundred and seventy-eight miles. It becomes therefore necessary to add to his estimates for the most practicable route, as shown by his report, from Breckinridge to Seattle, on Puget sound, an estimate of the cost of the portion of the road east from Breckinridge to the head of Lake Superior.

The route, then, for which the estimates below are predicated, starts from the head of Lake Superior, and pursuing probably as direct a course as will be found practicable westwardly, to the crossing of the Mississippi river at Little Falls, the most feasible site for a bridge, according to Governor Stevens, it proceeds thence, *via* Breckinridge, to Fort Union; thence, *via* Milk river and Box Elder creek to Fort Benton; thence, *via* Plateau route to Cadotte's Pass; thence, *via* Black Foot Fork to Bitter Root river; down Bitter Root river to the mouth of Saint Regis de Borgia river; up said river to Stevens's Pass, through the Cœur d'Aléne mountains; down Cœur d'Aléne river, north of Cœur d'Aléne lake to the crossing of the Columbia river, near the mouth of the Yakima river; thence, up the last named river to the Snoqualmoo Pass; thence, *via* the short tunnel of 4,000 yards through the Cascade range of mountains to Seattle, including the branch from the fork of line to Vancouver or point near Portland; the grades being the same as adopted by Governor Stevens in his report.

Here I will remark that from information received from reliable sources, I learn that the cost of material and labor has increased on the east side of the Rocky mountains since 1856, from 100 to 115 per cent.; on the western side the cost has increased for material something over 100 per cent., and for labor about 66 per cent. A fair average increase of the estimates of Governor Stevens, to accord with prices at the present date, would be, then, 100 per cent.

The estimate of the cost of the road at present rates, therefore, from the head of Lake Superior to Seattle, *via* as above, by Little Falls, Fort Union, Fort Benton, Cadotte's Pass, Cœur d'Aléne mission, north of Cœur d'Aléne lake, through the Cascade range at Snoqualmoo Pass, using the short tunnel, with branch from fork of line to Vancouver, or a point at or near Portland, will be as follows:

Portions of route.	Miles.	Per mile.	Cost.
Lake Superior to Breckinridge.....	278	\$50,000	\$13,900,000
Breckinridge to crossing of Milk river	712	80,000	56,960,000
Crossing of Milk river to point of departure from Box Elder creek.....	30	80,000	2,400,000
Thence to Fort Benton.....	51.5	160,000	8,240,000
Fort Benton to entrance into short tunnel.....	75.5	140,000	10,570,000
Short tunnel 2,640 feet, at \$240 per foot, lineal.....			633,600
Thence to entrance to tunnel at Cadotte's Pass.....	26.7	140,000	3,738,000
Tunnel 22,123 feet, at \$260 per foot	4.19		5,751,980
Thence to crossing of Hell-Gate.....	91.86	120,000	11,023,200
Thence to crossing of Bitter Root.....	65	100,000	6,500,000
Thence to entrance into tunnel at Stevens's Pass....	35	120,000	4,200,000
Tunnel 8,448 feet, at \$260 per foot	1.6		2,196,480
West end of tunnel to Cœur d'Aléne mission	48.5	120,000	5,820,000
Thence to point beyond crossing of Spokane.....	70.5	120,000	8,460,000
Thence to fork of line to Vancouver, or Portland....	91.25	90,000	8,212,500
Thence to crossing of Columbia.....	20	90,000	1,800,000
Thence to entrance into short tunnel, through Cascade range.....	138.25	100,000	13,825,000

Estimate of cost—Continued.

Portions of route.	Miles.	Per mile.	Cost.
Short tunnel 4,000 yards, at \$780 per yard	2.247	\$200,000	\$4,020,000
With $4\frac{1}{2}$ miles of difficult work	4.5		
Thence to Seattle	75	120,000	9,000,000
Telegraph line, at \$3,000 per mile, for $1,821\frac{597}{1000}$ miles, not included by Governor Stevens			5,464,791
Total, exclusive of contingent expenses. (which see below)	$1,821\frac{597}{1000}$		182,715,551
Branch road from fork of line to the crossing of Columbia	20	90,000	1,800,000
Thence to Dalles	113	120,000	13,560,000
Thence to Vancouver	90	200,000	18,000,000
Telegraph line 223 miles, at \$3,000 per mile, not included by Governor Stevens			669,000
Total length and cost of branch	223		34,029,000
Contingencies as follows:			
On account of steamers on the Missouri and Columbia rivers			3,000,000
Reservoirs, aqueducts, &c.			4,000,000
Depots and permanent fixtures			3,500,000
Engineering, &c., &c.			10,000,000
Total length and cost of road, with branch	$2,044\frac{597}{1000}$		237,244,551
Making average cost per mile			\$116,034 88

It is presumed, from the largeness of the several items in the above estimate, Governor Stevens has embraced in them the probable cost of the rolling stock. Should he, however, have omitted this, the above estimate should be increased—at \$5,600 per mile—\$11,449,743, making total amount of estimate, under this supposition, \$248,694,294.

It is also proper to remark, that the items "reservoirs, aqueducts, &c.," estimated at \$4,000,000, are retained in the foregoing estimates, though Governor Stevens makes no mention of their necessity, in his report. It is probable, however, that he has considered them requisite on account of the scarcity of water at places along the route, and the necessity of supplying the same for economical purposes connected with operating the road.

I now present an estimate of the cost, taking as a basis the cost of the Union Pacific railroad, as far as constructed on the 4th of October last, from the initial point at Omaha to the one hundredth meridian of west longitude, a distance of 246 miles, and the cost of the Central Pacific railroad of California, as far as constructed on the 13th October last, a distance of 94 miles eastwardly from Sacramento.

Items.	Cost.
$2,044\frac{597}{1000}$ miles, at \$73,114 per mile	\$149,488,665
Rolling stock, depots, and permanent fixtures, \$11,200 per mile,	22,899,486
To the above should be added steamers on the Missouri and Columbia	3,000,000
Reservoirs, aqueducts, &c.	4,000,000
Engineering and contingencies	10,000,000

8.53 miles of tunnelling, less the rate of \$73,114 per mile for that distance	\$11, 078, 398
Telegraph line 2,044 $\frac{5.97}{1000}$ miles, at \$3,000	6, 133, 791
Total cost of road, with branch	206, 600, 340
Making average cost per mile	\$101, 046 97

Which amount is about 87 per cent. of cost, as first estimated by using Governor Stevens's estimates, with the additional 100 per cent.

Since there are near 500 miles of the Union Pacific railroad more easily constructed than can be found on the Northern Pacific route, and the general character of the work on the last named route seems from Governor Stevens's report to be heavier and more expensive, it is highly probable that the estimate first given above is not too large.

All of which is respectfully submitted.

J. H. SIMPSON,
Lieutenant Colonel Engineers,
and Brer. Brig. Gen. U. S. A.

Hon. O. H. BROWNING, *Secretary of the Interior.*

QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., November 30, 1866.

SIR: In response to so much of the resolution of the Senate of the United States, of July 24, 1866, as requests information as to the probable amount of transportation which will be required by the War Department on the route mentioned in the charter of the Northern Pacific Railroad company, I have the honor to report, that it is estimated that there will be required annually, transportation for 1,500 men, and for 15,330,000 pounds of military stores, as follows:

For a distance of 150 miles for	200 men, and for	2,044,000 pounds of stores.
For a distance of 300 miles for	200 men, and for	2,044,000 pounds of stores.
For a distance of 450 miles for	200 men, and for	2,044,000 pounds of stores.
For a distance of 600 miles for	200 men, and for	2,044,000 pounds of stores.
For a distance of 750 miles for	200 men, and for	2,044,000 pounds of stores.
For a distance of 900 miles for	100 men, and for	1,022,000 pounds of stores.
For a distance of 1,050 miles for	100 men, and for	1,022,000 pounds of stores.
For a distance of 1,200 miles for	100 men, and for	1,022,000 pounds of stores.
For a distance of 1,350 miles for	100 men, and for	1,022,000 pounds of stores.
For a distance of 1,500 miles for	100 men, and for	1,022,000 pounds of stores.

Total	1,500 men.	15,330,000 pounds.
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This estimate is based upon the establishment or maintenance along the line of the route, or to be supplied by it, of fifteen military posts, with an average force at each of 140 foot and 70 mounted men, and that ten of these posts will be supplied from the eastern terminus, and five from the western terminus of the said road.

The resolution of the Senate is herewith respectfully returned.

I have the honor to be, with great respect, your obedient servant,

M. C. MEIGS,

Brevet Major Gen. U. S. Army, Q. M. General.

Hon. EDWIN M. STANTON, *Secretary of War.*